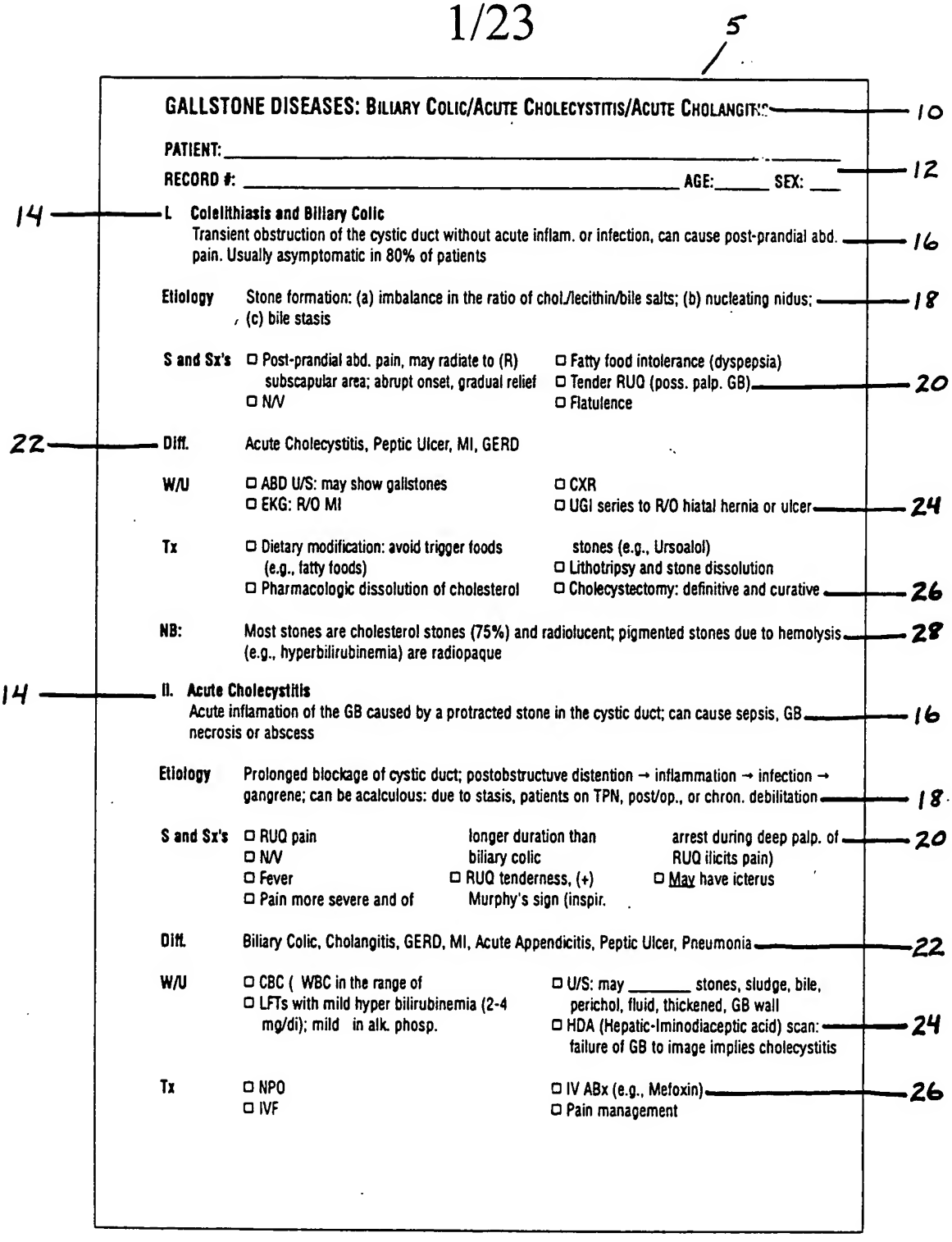

5
GALLSTONE DISEASES: BILIARY COLIC/ACUTE CHOLECYSTITIS/ACUTE CHOLANGITIS
10
PATIENT:
RECORD #: AGE: SEX:
12
14
I. Colelithiasis and Biliary Colic
Transient obstruction of the cystic duct without acute inflam. or infection, can cause post-prandial abd. pain. Usually asymptomatic in 80% of patients
16
Etiology
Stone formation: (a) imbalance in the ratio of chol./lecithin/bile salts; (b) nucleating nidus; (c) bile stasis
18
S and Sx's
☐ Post-prandial abd. pain, may radiate to (R) subscapular area; abrupt onset, gradual relief
☐ N/V
☐ Fatty food intolerance (dyspepsia)
☐ Tender RUQ (poss. palp. GB)
☐ Flatulence
20
22
Diff.
Acute Cholecystitis, Peptic Ulcer, MI, GERD
W/U
☐ ABD U/S: may show gallstones
☐ EKG: R/O MI
☐ CXR
☐ UGI series to R/O hiatal hernia or ulcer
24
Tx
☐ Dietary modification: avoid trigger foods (e.g., fatty foods)
☐ Pharmacologic dissolution of cholesterol
stones (e.g., Ursoalol)
☐ Lithotripsy and stone dissolution
☐ Cholecystectomy: definitive and curative
26
NB:
Most stones are cholesterol stones (75%) and radiolucent; pigmented stones due to hemolysis (e.g., hyperbilirubinemia) are radiopaque
28
14
II. Acute Cholecystitis
Acute inflamation of the GB caused by a protracted stone in the cystic duct; can cause sepsis, GB necrosis or abscess
16
Etiology
Prolonged blockage of cystic duct; postobstructuve distention → inflammation → infection → gangrene; can be acalculous: due to stasis, patients on TPN, post/op., or chron. debilitation
18
S and Sx's
☐ RUQ pain
☐ N/V
☐ Fever
☐ Pain more severe and of longer duration than biliary colic
☐ RUQ tenderness, (+) Murphy's sign (inspir. arrest during deep palp. of RUQ ilicits pain)
☐ May have icterus
20
Diff.
Biliary Colic, Cholangitis, GERD, MI, Acute Appendicitis, Peptic Ulcer, Pneumonia
22
W/U
☐ CBC (WBC in the range of
☐ LFTs with mild hyper bilirubinemia (2-4 mg/di); mild in alk. phosp.
☐ U/S: may _____ stones, sludge, bile, perichol, fluid, thickened, GB wall
☐ HDA (Hepatic-Iminodiaceptic acid) scan: failure of GB to image implies cholecystitis
24
Tx
☐ NPO
☐ IVF
☐ IV ABx (e.g., Mefoxin)
☐ Pain management
26

FIG. 1A

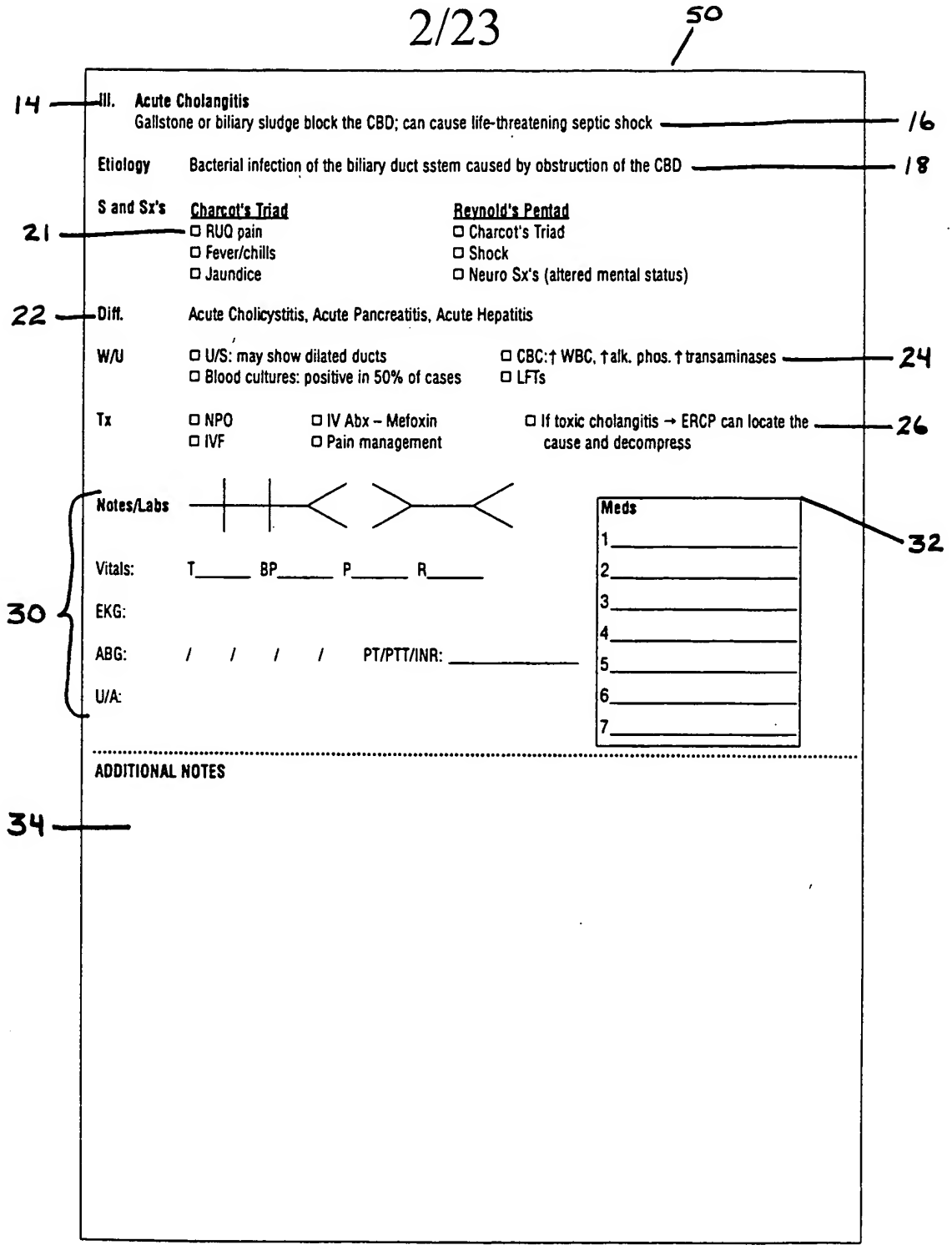

50
14
III. Acute Cholangitis
Gallstone or biliary sludge block the CBD; can cause life-threatening septic shock
16
Etiology
Bacterial infection of the biliary duct sstem caused by obstruction of the CBD
18
S and Sx's
Charcot's Triad
21
RUQ pain
Fever/chills
Jaundice
Reynold's Pentad
Charcot's Triad
Shock
Neuro Sx's (altered mental status)
22
Diff.
Acute Cholicystitis, Acute Pancreatitis, Acute Hepatitis
W/U
U/S: may show dilated ducts
Blood cultures: positive in 50% of cases
CBC:↑ WBC, ↑alk. phos. ↑transaminases
LFTs
24
Tx
NPO
IVF
IV Abx – Mefoxin
Pain management
If toxic cholangitis → ERCP can locate the cause and decompress
26
Notes/Labs
Meds
1
2
3
4
5
6
7
32
Vitals: T_____ BP_____ P_____ R_____
EKG:
ABG: / / / / PT/PTT/INR: _____
U/A:
30
ADDITIONAL NOTES
34

FIG. 1B

3/23

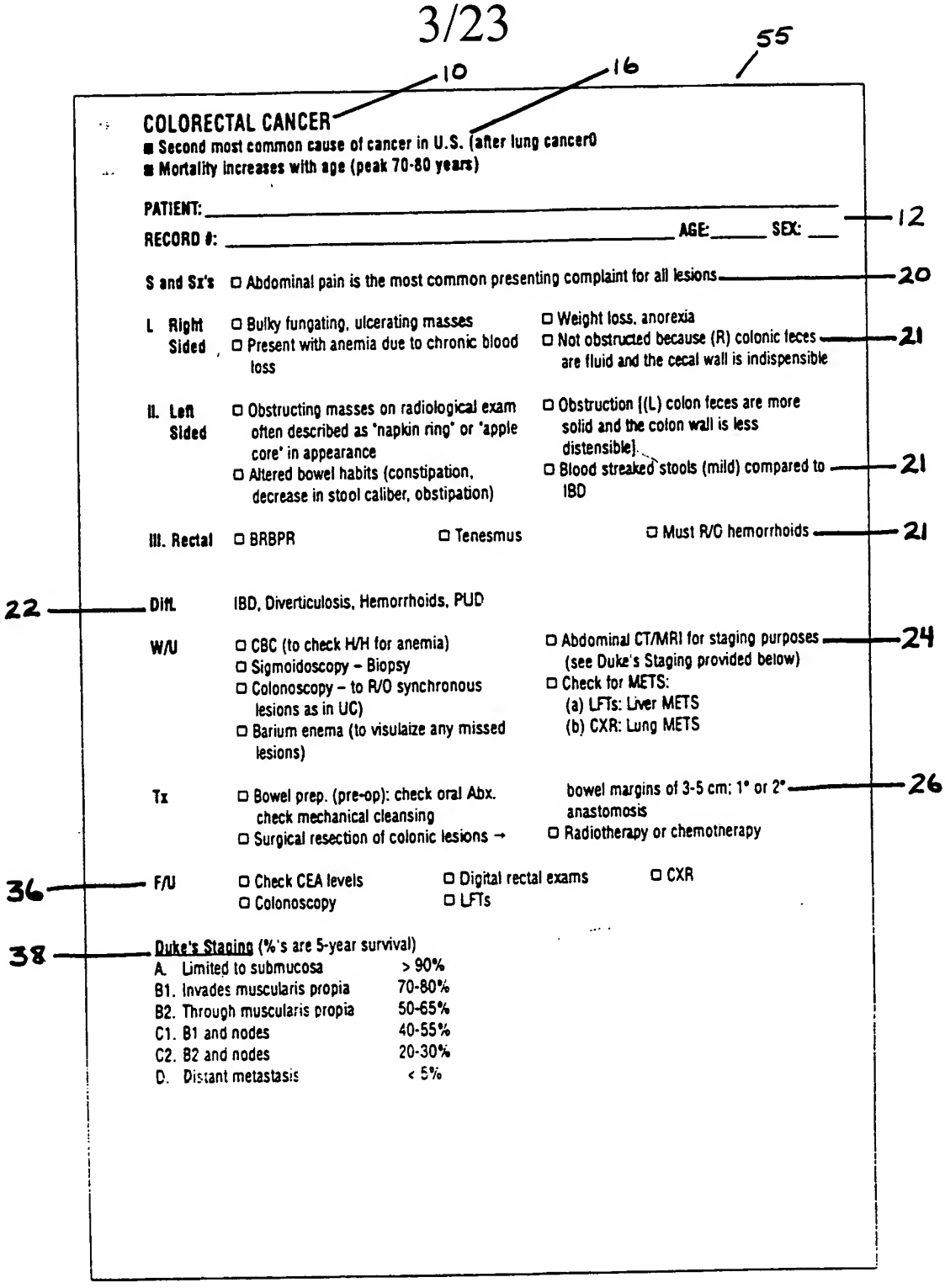

10
16
55
COLORECTAL CANCER
■ Second most common cause of cancer in U.S. (after lung cancer0
■ Mortality increases with age (peak 70-80 years)
PATIENT:
RECORD #:
AGE:
SEX:
12
S and Sx's
☐ Abdominal pain is the most common presenting complaint for all lesions
20
I. Right Sided
☐ Bulky fungating, ulcerating masses
☐ Present with anemia due to chronic blood loss
☐ Weight loss, anorexia
☐ Not obstructed because (R) colonic feces are fluid and the cecal wall is indispensible
21
II. Left Sided
☐ Obstructing masses on radiological exam often described as "napkin ring" or "apple core" in appearance
☐ Altered bowel habits (constipation, decrease in stool caliber, obstipation)
☐ Obstruction [(L) colon feces are more solid and the colon wall is less distensible]
☐ Blood streaked stools (mild) compared to IBD
21
III. Rectal
☐ BRBPR
☐ Tenesmus
☐ Must R/O hemorrhoids
21
22
Diff.
IBD, Diverticulosis, Hemorrhoids, PUD
W/U
☐ CBC (to check H/H for anemia)
☐ Sigmoidoscopy – Biopsy
☐ Colonoscopy – to R/O synchronous lesions as in UC)
☐ Barium enema (to visulaize any missed lesions)
☐ Abdominal CT/MRI for staging purposes (see Duke's Staging provided below)
☐ Check for METS:
(a) LFTs: Liver METS
(b) CXR: Lung METS
24
Tx
☐ Bowel prep. (pre-op): check oral Abx. check mechanical cleansing
☐ Surgical resection of colonic lesions →
bowel margins of 3-5 cm; 1° or 2° anastomosis
☐ Radiotherapy or chemotherapy
26
36
F/U
☐ Check CEA levels
☐ Colonoscopy
☐ Digital rectal exams
☐ LFTs
☐ CXR
38
Duke's Staging (%'s are 5-year survival)
A. Limited to submucosa > 90%
B1. Invades muscularis propia 70-80%
B2. Through muscularis propia 50-65%
C1. B1 and nodes 40-55%
C2. B2 and nodes 20-30%
D. Distant metastasis < 5%

FIG. 2A

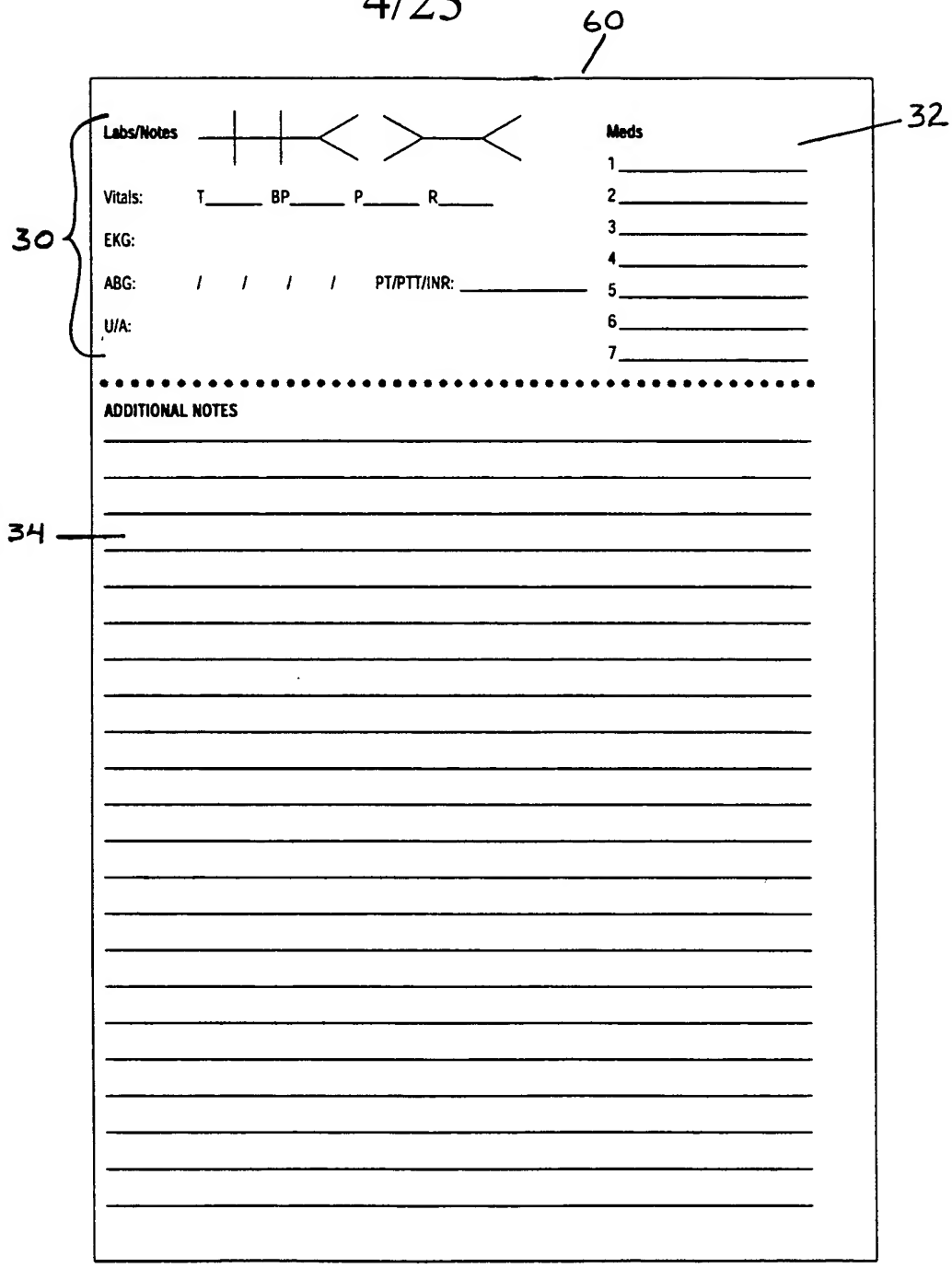

60
Labs/Notes
Meds
32
1
2
3
4
5
6
7
Vitals: T____ BP____ P____ R____
30
EKG:
ABG: / / / / PT/PTT/INR: _____
U/A:
ADDITIONAL NOTES
34

FIG. 2B

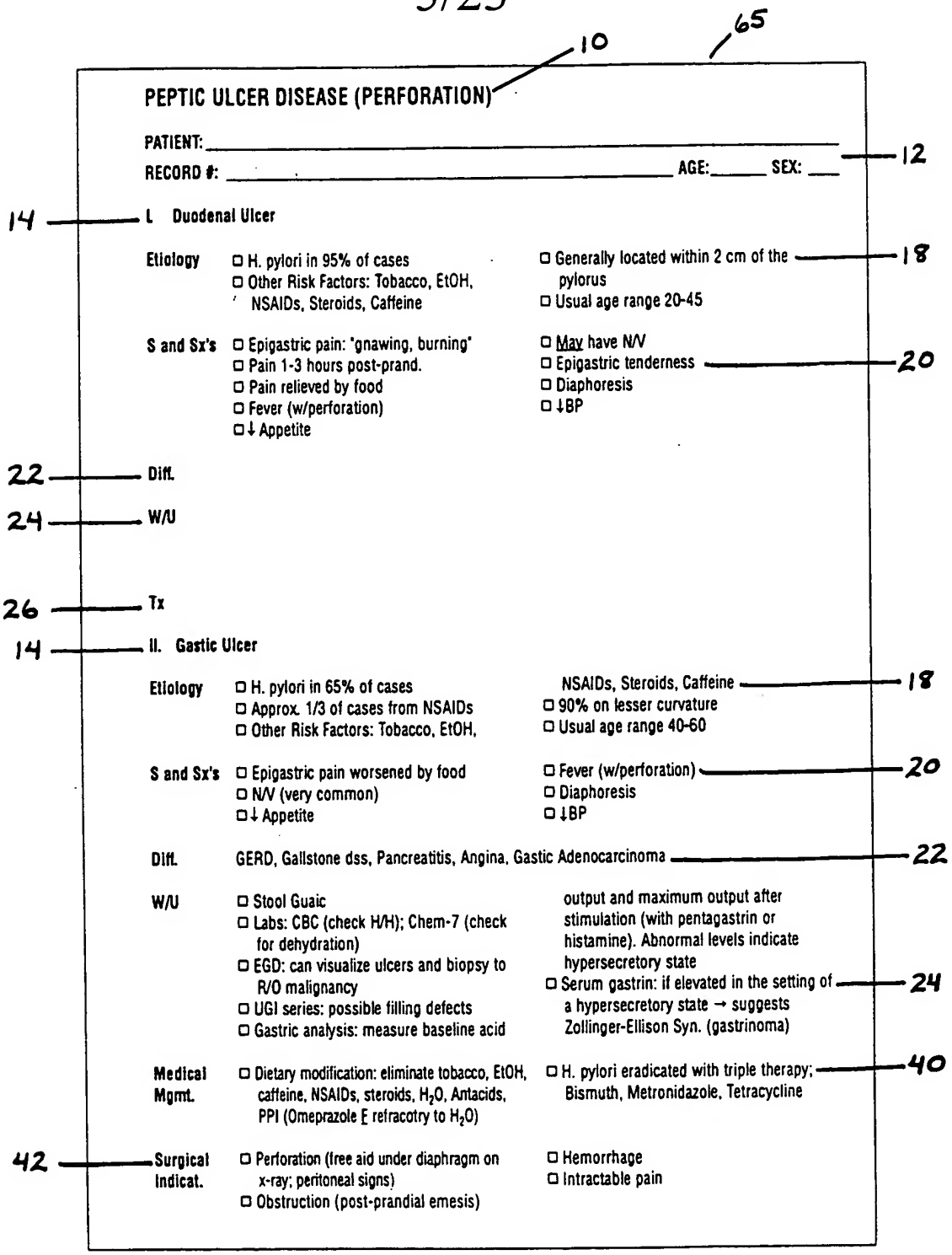
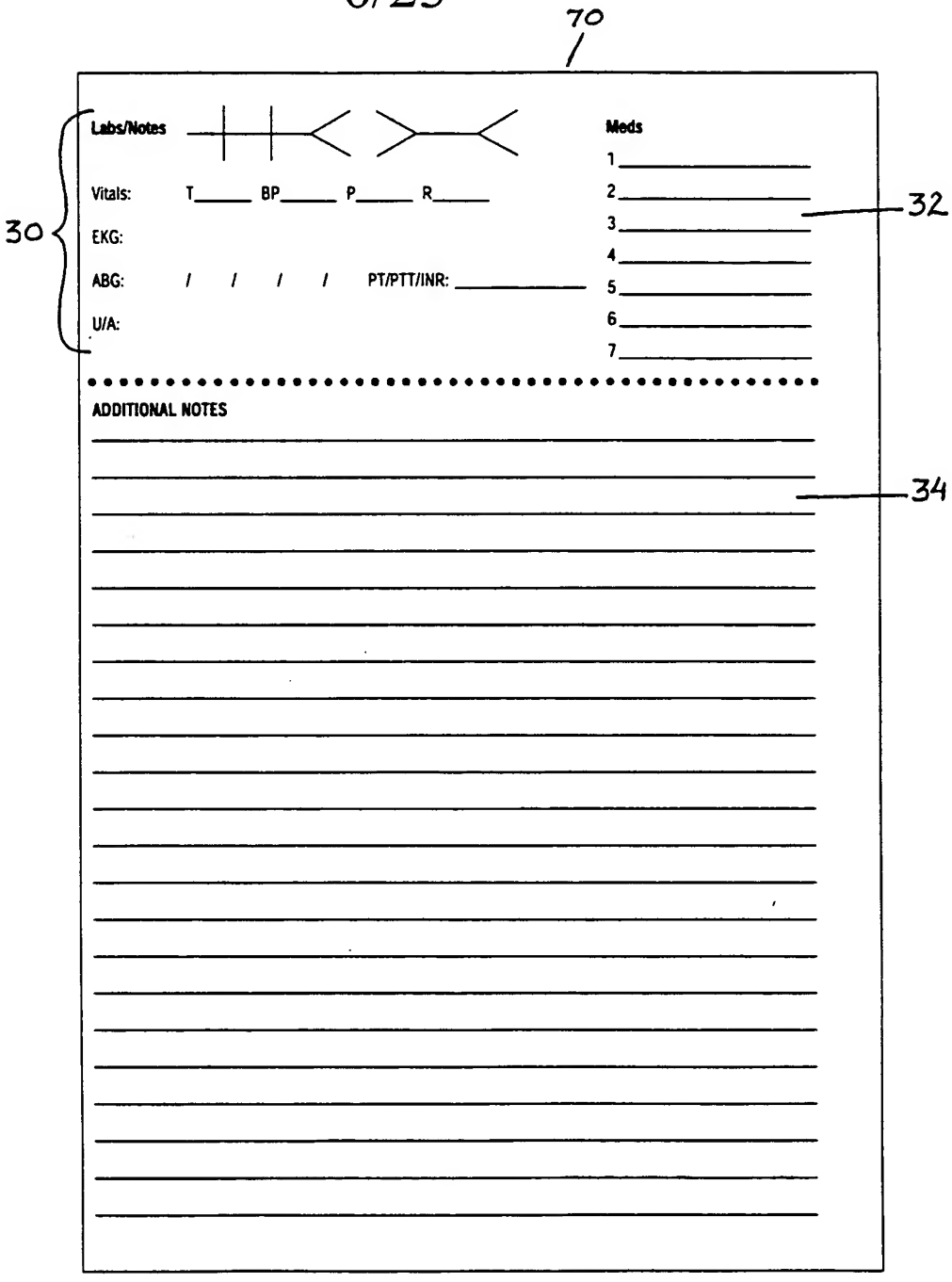

10
65
PEPTIC ULCER DISEASE (PERFORATION)
PATIENT:
RECORD #:
AGE:
SEX:
12
14
I. Duodenal Ulcer
Etiology
H. pylori in 95% of cases
Other Risk Factors: Tobacco, EtOH, NSAIDs, Steroids, Caffeine
Generally located within 2 cm of the pylorus
Usual age range 20-45
18
S and Sx's
Epigastric pain: "gnawing, burning"
Pain 1-3 hours post-prand.
Pain relieved by food
Fever (w/perforation)
↓ Appetite
May have N/V
Epigastric tenderness
Diaphoresis
↓BP
20
22
Diff.
24
W/U
26
Tx
14
II. Gastic Ulcer
Etiology
H. pylori in 65% of cases
Approx. 1/3 of cases from NSAIDs
Other Risk Factors: Tobacco, EtOH, NSAIDs, Steroids, Caffeine
90% on lesser curvature
Usual age range 40-60
18
S and Sx's
Epigastric pain worsened by food
N/V (very common)
↓ Appetite
Fever (w/perforation)
Diaphoresis
↓BP
20
Diff.
GERD, Gallstone dss, Pancreatitis, Angina, Gastic Adenocarcinoma
22
W/U
Stool Guaic
Labs: CBC (check H/H); Chem-7 (check for dehydration)
EGD: can visualize ulcers and biopsy to R/O malignancy
UGI series: possible filling defects
Gastric analysis: measure baseline acid output and maximum output after stimulation (with pentagastrin or histamine). Abnormal levels indicate hypersecretory state
Serum gastrin: if elevated in the setting of a hypersecretory state → suggests Zollinger-Ellison Syn. (gastrinoma)
24
Medical Mgmt.
Dietary modification: eliminate tobacco, EtOH, caffeine, NSAIDs, steroids, H_2O, Antacids, PPI (Omeprazole E refractory to H_2O)
H. pylori eradicated with triple therapy; Bismuth, Metronidazole, Tetracycline
40
42
Surgical Indicat.
Perforation (free aid under diaphragm on x-ray; peritoneal signs)
Obstruction (post-prandial emesis)
Hemorrhage
Intractable pain

FIG. 3A


70
Labs/Notes
Meds
1
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7
Vitals: T____ BP____ P____ R____
EKG:
ABG: / / / / PT/PTT/INR: ____
U/A:
30
32
ADDITIONAL NOTES
34

FIG. 3B

7/23

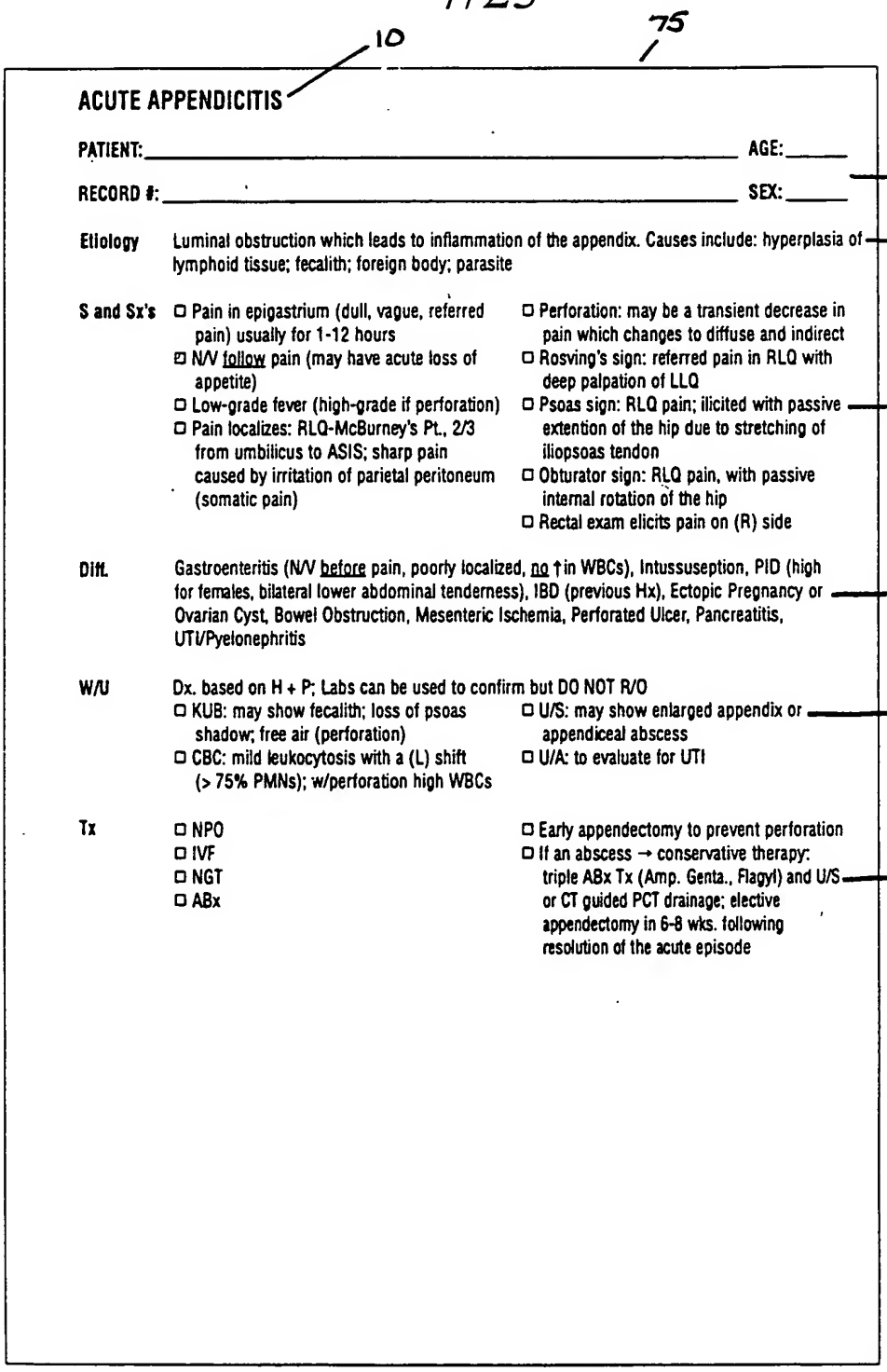

10
75
ACUTE APPENDICITIS
PATIENT:
AGE:
RECORD #:
SEX:
12
Etiology
Luminal obstruction which leads to inflammation of the appendix. Causes include: hyperplasia of lymphoid tissue; fecalith; foreign body; parasite
18
S and Sx's
☐ Pain in epigastrium (dull, vague, referred pain) usually for 1-12 hours
☑ N/V follow pain (may have acute loss of appetite)
☐ Low-grade fever (high-grade if perforation)
☐ Pain localizes: RLQ-McBurney's Pt., 2/3 from umbilicus to ASIS; sharp pain caused by irritation of parietal peritoneum (somatic pain)
☐ Perforation: may be a transient decrease in pain which changes to diffuse and indirect
☐ Rosving's sign: referred pain in RLQ with deep palpation of LLQ
☐ Psoas sign: RLQ pain; ilicited with passive extention of the hip due to stretching of iliopsoas tendon
☐ Obturator sign: RLQ pain, with passive internal rotation of the hip
☐ Rectal exam elicits pain on (R) side
20
Diff.
Gastroenteritis (N/V before pain, poorly localized, no ↑in WBCs), Intussuseption, PID (high for females, bilateral lower abdominal tenderness), IBD (previous Hx), Ectopic Pregnancy or Ovarian Cyst, Bowel Obstruction, Mesenteric Ischemia, Perforated Ulcer, Pancreatitis, UTI/Pyelonephritis
22
W/U
Dx. based on H + P; Labs can be used to confirm but DO NOT R/O
☐ KUB: may show fecalith; loss of psoas shadow; free air (perforation)
☐ CBC: mild leukocytosis with a (L) shift (> 75% PMNs); w/perforation high WBCs
☐ U/S: may show enlarged appendix or appendiceal abscess
☐ U/A: to evaluate for UTI
24
Tx
☐ NPO
☐ IVF
☐ NGT
☐ ABx
☐ Early appendectomy to prevent perforation
☐ If an abscess → conservative therapy: triple ABx Tx (Amp. Genta., Flagyl) and U/S or CT guided PCT drainage; elective appendectomy in 6-8 wks. following resolution of the acute episode
26

FIG. 4A

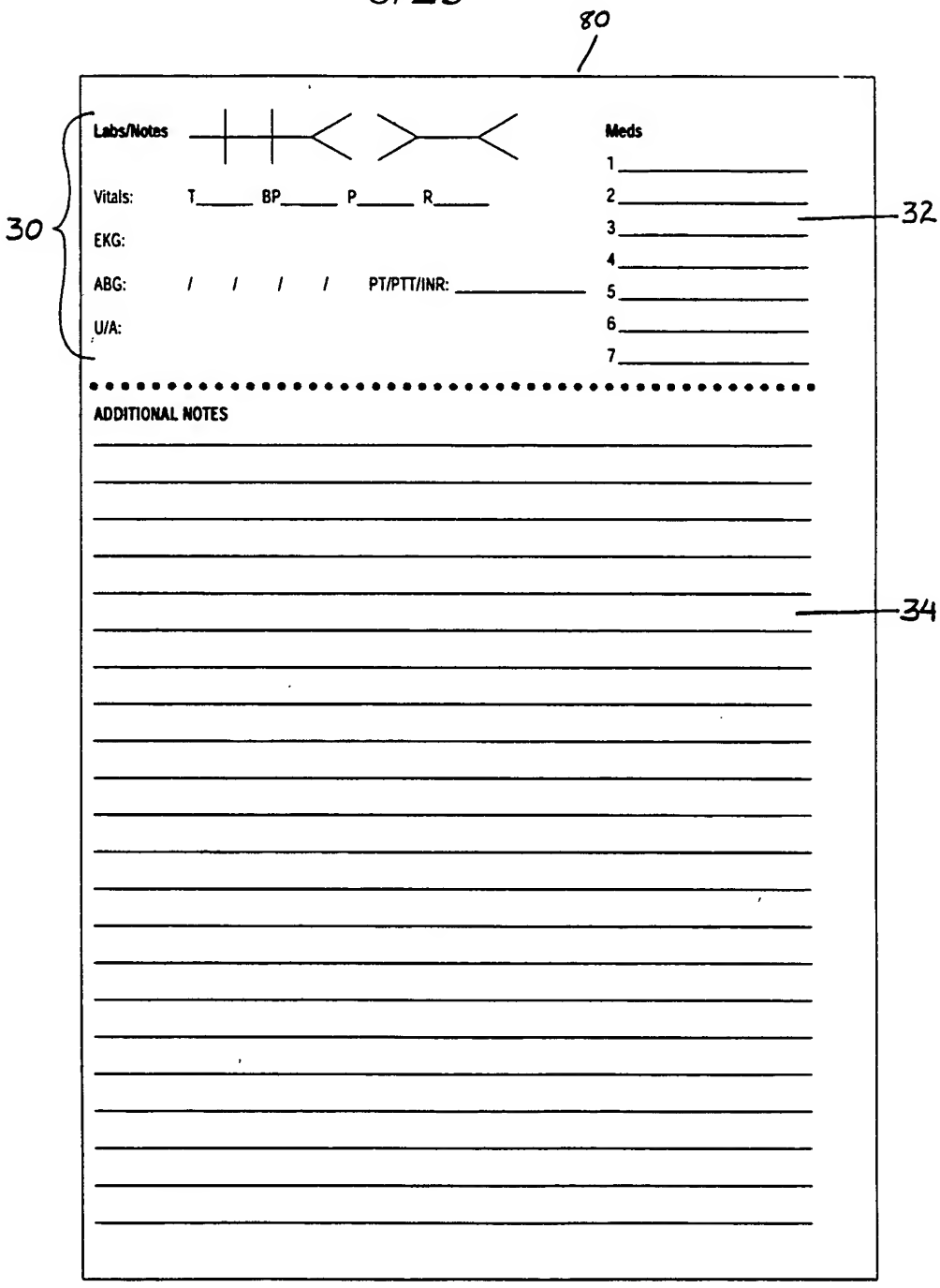

80
Labs/Notes
Meds
1
2
3
4
5
6
7
Vitals: T____ BP____ P____ R____
EKG:
ABG: / / / / PT/PTT/INR: ____
U/A:
30
32
34
ADDITIONAL NOTES

FIG. 4B

9/23

85

MAJOR DEPRESSIVE DISORDER

PATIENT: _____

RECORD #: _____ AGE: _____ SEX: ___ 12

Epidemiology Male/female ratio → 1:2; peak onset 20-40 years old; 3X higher risk with positive family history; lifetime prevalence 20% and 5% for the general population; 40,000-50,000 Americans die annually due to suicide and 70% of these suicides are associated with depressive illness. 44

Etiology Numerous postulates exist in the behavioral, cognitive and psychodynamic arenas. In addition, the biologic theories include hypotheses tosupport decreased catecholamines and abnormal neurotransmitter function (specifically 5-HT and norepinephrine). 18

Predisposing factors include psychosocial stressors, chronic medical illness, substance abuse/dependence, childbirth.

S and Sx's

Mood Associated
- ☐ Low mood/sadness
- ☐ Feelings of hopelessness, worthlessness, inadequacy
- ☐ Anxiety
- ☐ Apathy
- ☐ Irritability
- ☐ Anhedonia
- ☐ ↓ Coping skills
- ☐ Social withdrawal/isolation
- ☐ Suicidal thoughts

Memory Related
- ☐ Poor concentration
- ☐ Poor attention/focusing
- ☐ ↓ Memory/recall
- ☐ Cognitive difficulties

Somatic Complaints 21
- ☐ Tearfulness
- ☐ Headache
- ☐ ↓ Sleep/Insomnia
- ☐ Hypersomnia (atypical)
- ☐ Weight loss
- ☐ Weight gain (atypical)
- ☐ Fatigue
- ☐ ↓ Appetite or appetite (atypical)

Diff. Mood disorder due to a general medical condition (viral illness, endocrine abnormality, cardiopulmonary disease, renal disorder, cancer, nutritional deficiency, Parkinson's disease, multiple sclerosis), dysthymic disorder, dementia, adjustment disorder with depressed mood, general bereavement, substance-induced mood disorder, psychotic disorders, medication side-effect/adverse reaction (antihypertensives, steroids, methyldopa), seasonal affective disorder. 22

W/U
- ☐ Labs: CBC (evaluate for anemia); chemistry panel (e.g., hypoglycemia can cause anxiety, agitation, poor concentration), serum Ca^{++} ($\uparrow TCA^{++}$ and $\downarrow Ca^{++}$ can cause depression), B12 (deficiency can cause fatigue, agitation, personality change), Folate LFTs, TFTs, (hypothyroidism may show low T_4, T_3, resin T_3), U/A, urine toxicology screen, syphilis serology (VDRL or RPR)
- ☐ CXR (cardiopulmonary disease can affect mental status)
- ☐ ECG (evaluate general cardiac electrical activity; changes from psychotropic medications such as prolonged PR, QT or QRS intervals; AV or bundle branch block) 24
- ☐ Head CT (evaluate brain parenchyma, bony structures; check for brain abscess, tumors or stroke)
- ☐ EEG (slowing may be evidenced due to tricyclic antidepressants)

Tx
- ☐ Selective Serotonin Reuptake Inhibitors (SSRIs)
- ☐ Tricyclic antidepressants
- ☐ Monoamine Oxidase Inhibitors (MAOIs): atypical depression; usually reserved for depression which does not respond to other agents
- ☐ Adjunctive medications
- ☐ Psychotherapy: various modalities available (e.g., psychodynamic); frequency varies depending on goals, monitoring for suicidality, ensure treatment adherence 26
- ☐ ECT: refractory cases

FIG. 5A

10/23

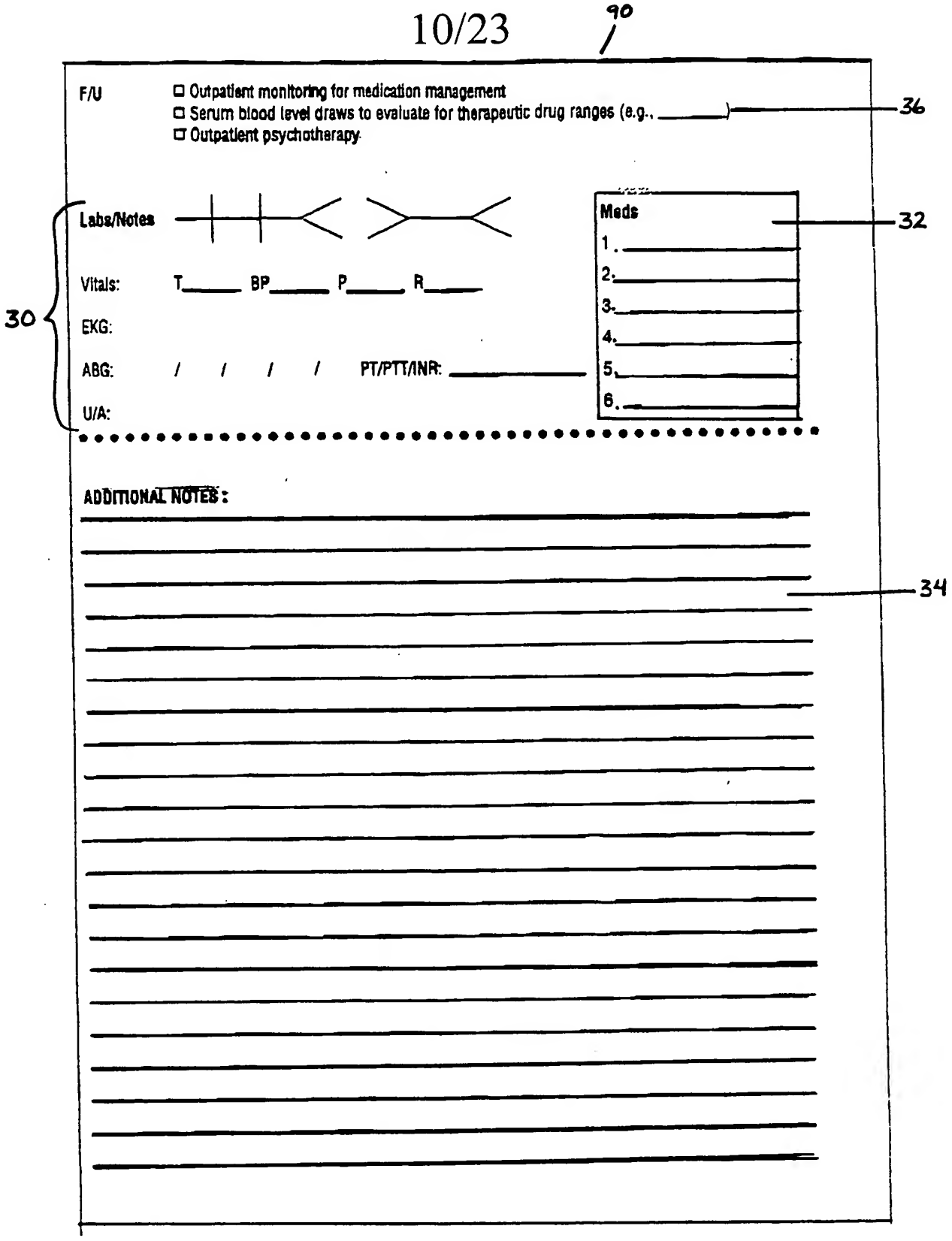

90
F/U
☐ Outpatient monitoring for medication management
☐ Serum blood level draws to evaluate for therapeutic drug ranges (e.g., _____)
☐ Outpatient psychotherapy
36
Labs/Notes
Meds
1.
2.
3.
4.
5.
6.
32
Vitals: T_____ BP_____ P_____ R_____
EKG:
ABG: / / / / PT/PTT/INR: _____
U/A:
30
ADDITIONAL NOTES:
34

FIG. 5B

11/23 95

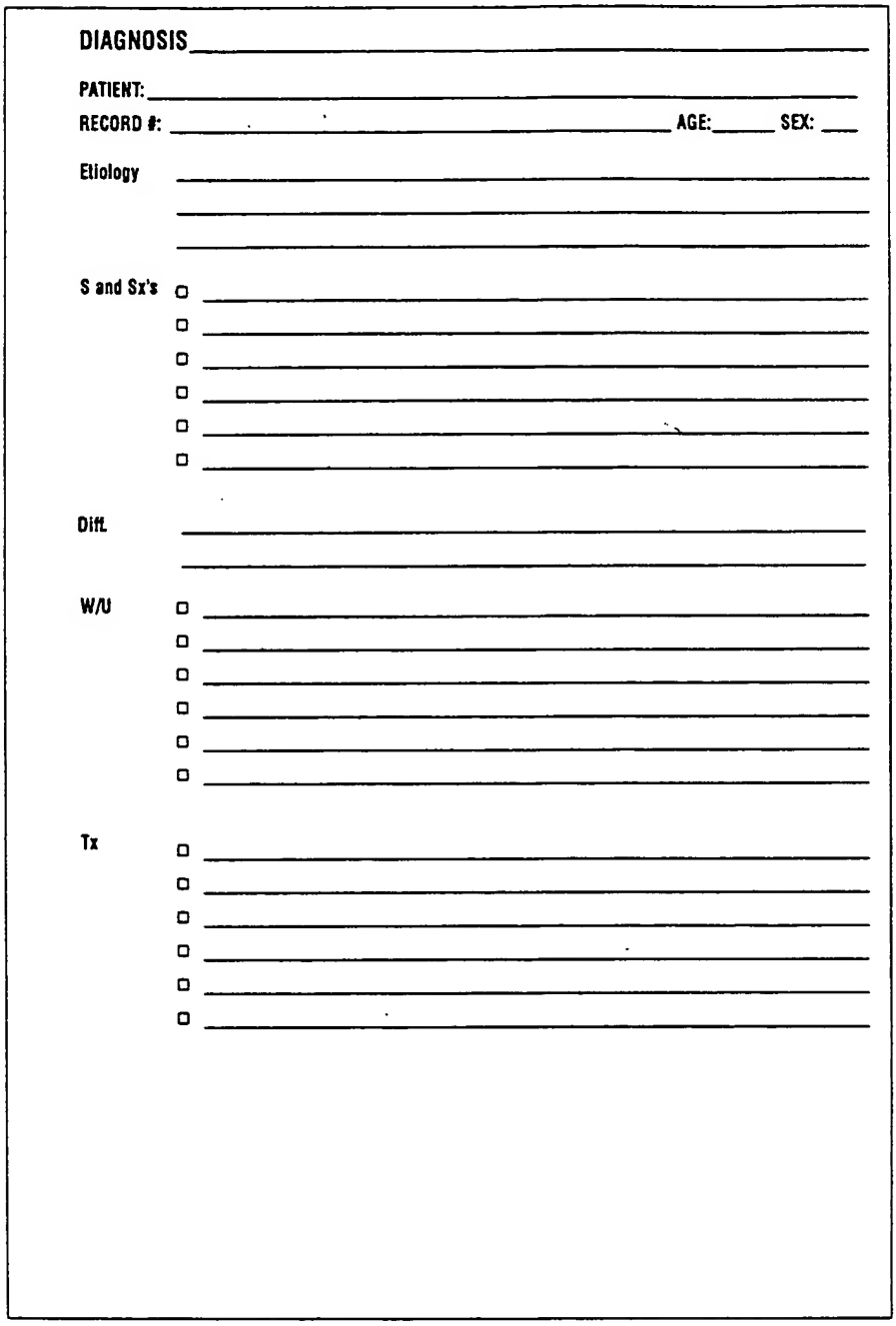
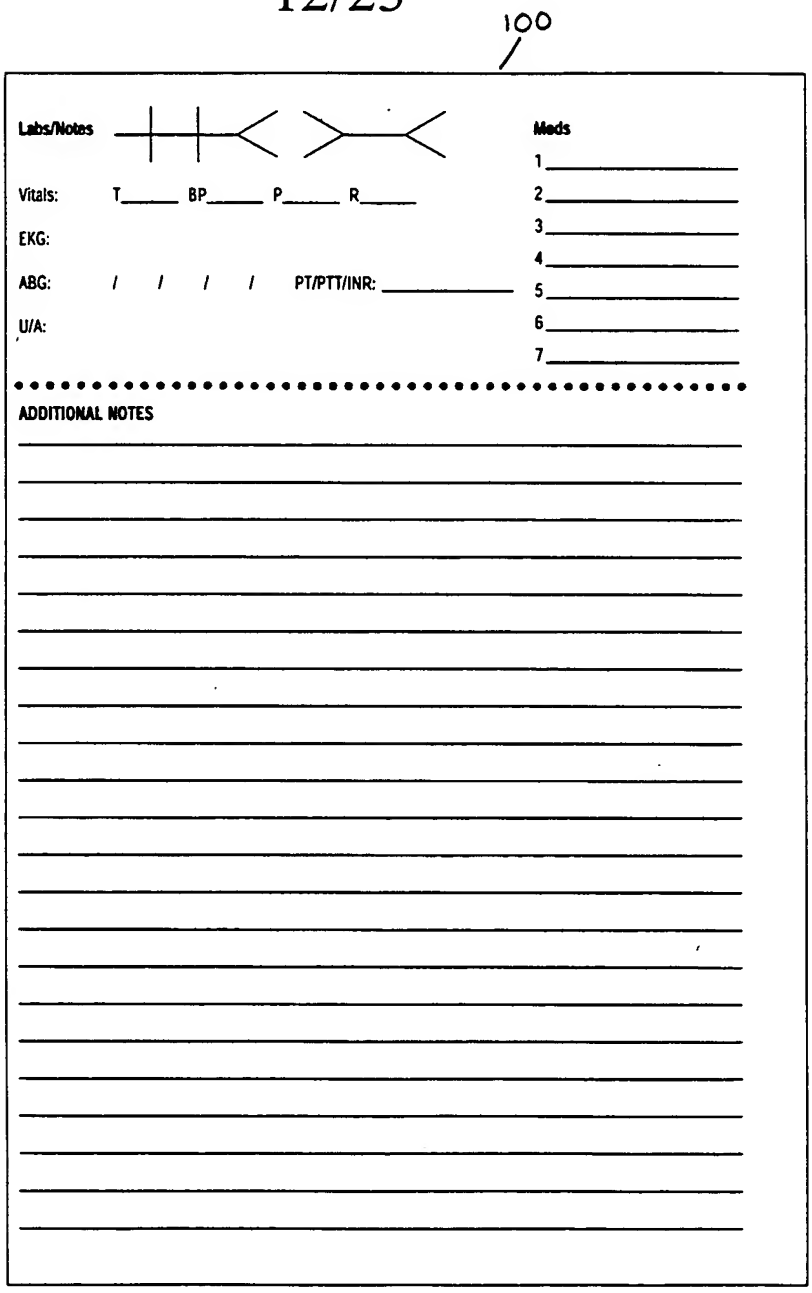


FIG. 6A


100
Labs/Notes
Meds
1
2
3
4
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6
7
Vitals: T____ BP____ P____ R____
EKG:
ABG: / / / / PT/PTT/INR: ____
U/A:
ADDITIONAL NOTES

FIG. 6B

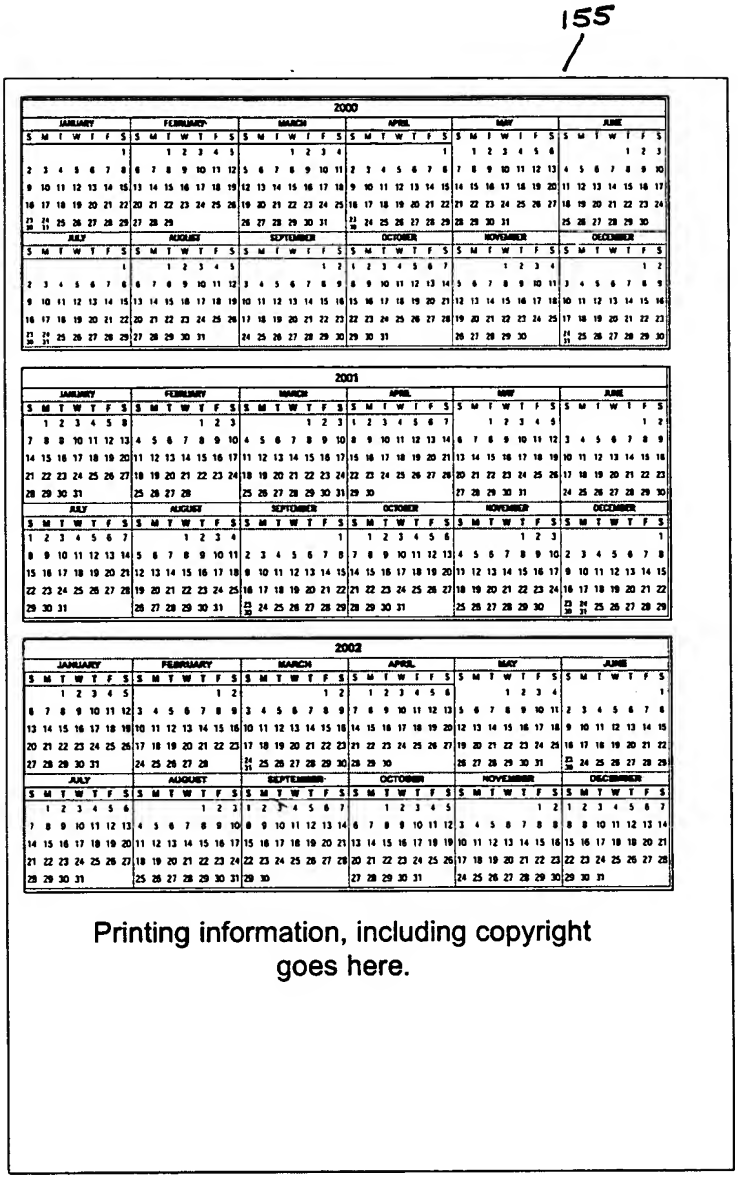
155
2000
2001
2002
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FIG. 7

160

110

NORMAL LAB VALUES/RANGES

LAB CHEMISTRIES

Na	Cl^-	BUN	Gluc.
135-145 mEq/L	98-106 mEq/L	7-18 mg/dL	70-115 mg/dL
3.5-5.1 mEq/L K	22-29 mEq/L HCO_3	0.6-1.2 mg/dL CR	

Anion Gap ..... 7-16 mEq/L
Osmolality ..... 275-295 mOsm/kg
Calcium, ionized ..... 4.65-5.28 mg/dL
Calcium, total ..... 8.4-10.2 mg/dL
Magnesium ..... 1.3-21 mEq/L
Phosphate ..... 2.7-4.5 mg/dL
Iron ..... M 65-175, F 50-170µg/dL
Iron, Sat. ..... M 20-60, F 15-50%
Ferritin ..... M 20-250, F 10-120 ng/mL
TIBC ..... 250-450 µg/dL
Bilirubin, conj. ..... 0-0.2 mg/dL
Bilirubin, total ..... 0.2-1.0 mg/dL
Albumin ..... 3.5-5.5 g/dL
Protein ..... 6.0-8.0 g/dL
α_1 -Fetoprotein ..... < 10 ng/mL
Alk. Phos. ..... M 38-126, F 70-230 U/L
LDH ..... 90-190 U/L
AST/SGOT ..... 7-40 U/L
ALT/SGPT ..... 7-40 U/L
GGT ..... M 9-50, F 8-40 U/L
CPK ..... M 38-174, F 26-140 U/L
CPK MB ..... < 5%
Amylase ..... 25-125 U/L
Lipase, 10-140, >60y ..... 18-180 U/L
C-peptide ..... 0.70-1.89 ng/mL
LDL Cholesterol ..... < 130 mg/dL
HDL Cholesterol ..... M >29, F > 35 mg/dL
Total Cholesterol ..... < 200 mg/dL
Triglycerides .... M 40-160m F 35-135 mg/dL

112

HEMATOLOGY

WBC	Hemoglobin	Platelets
4.5-11.0 x 10^3 per µL	M 13.5-17.5 g/dL F 12.0-16.0 g/dL	150-450 x 10^3 per µL
	Hematocrit M 39-49% F 35-45%	

RBC ..... M 4.3-5.7, F 3.8-5.1 x 10^6/µL
MCV ..... 80-100 fL
MCH ..... 26-34 pg/cell
Reticulocyte Count 0.5-1.5%
Haptoglobin ..... 16-185 mg/dL
Hemoglobin A_{1c} 5.0-7.5%
Bleeding Time ..... 2-7 min
PT ..... 11-15 sec
aPTT ..... 20-35 sec
ESR ..... M < 15, F < 20 mm/hr
CRP ..... < 8 mg/L (SI)
Neutrophils 57-67%
Segs 54-62%
Bands 3-5%
Lymphocytes 23-33%
Monocytes 3-7%
Eosinophils 1-3%
Basophils 0-1%

114

URINE VALUES

Albumin ..... 10-100 mg/day
Creatinine ..... M 14-26, F 11-20 mg/kg/day
Creat. Clear. ..... M 90-136 mL/min/1.73 m^2
F 80-125 mL/min/1.73 m^2
Glucose ..... < 0.5 g/day
Osmolality ..... 50-1400 mOsmol/kg
Protein ..... 10-150 mg/day
Specific Gravity 1.002-1.030
Urea Nitrogen ..... 12-20 g/day
Uric Acid ..... 250-750 mg/day
Volume (min.) ..... 0.5-1.0 mL/kg/hr

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ARTERIAL BLOOD GASES

pH	$PaCO_2$	PaO_2	HCO_3	O_2
7.35-7.45	35-45 mm Hg	80-100 mm Hg	21-27 mEq/L	Satur. 95-98%

Base Excess: ±2 mEq/L

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CARDIAC PARAMETERS & FORMULAS

CO	Cardiac output *(heart rate x stroke volume)*	4-8 l/min
CI	Cardiac Index *(CO/BSA)*	2.8-4.2 l/min/m2
MAP	Mean Arter Press *[(Sys BP - Dias BP)/3] + Dias BP*	80-100 mmHG
SVR	Systemic Vascular Resistance *(MAP - CVP)x(80)/CO*	800-1200 dyne/sec/cm5
PVR	Pulmonary Vascular Resistance *(PAM - PCWP)X(80)/CO*	45-120 dyne/sec/cm5
QT_c	*(QT / square root of RR)*	0.38-0.42
Right Atrial Pressure	(central venous pressure)	0-8 mmHg
PAS	Pulmonary Artery Systolic Pressure	20-30 mmHg
PAD	Pulmonary Artery Diastolic Pressure	10-15 mmHg
PCWP	Pulmonary Capillary Wedge Pressure	8-12 mmHg (post-MI -16 mmHg)

Please note: It is strongly advised that you check normal lab values for your hospital, medical center or laboratory. These values can vary by location.

FIG. 8

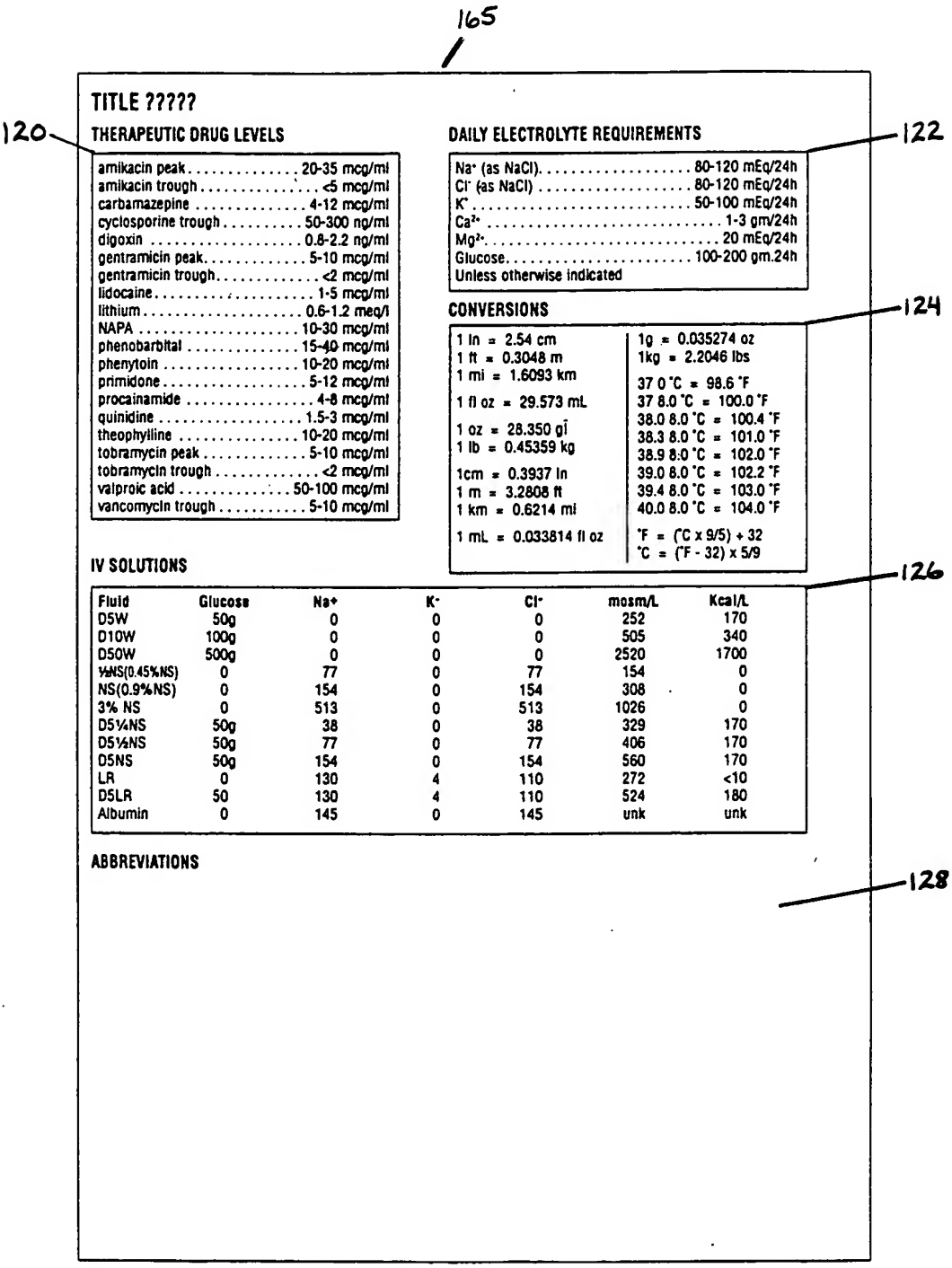
165
TITLE ?????
120
THERAPEUTIC DRUG LEVELS
amikacin peak ..... 20-35 mcg/ml
amikacin trough ..... <5 mcg/ml
carbamazepine ..... 4-12 mcg/ml
cyclosporine trough ..... 50-300 ng/ml
digoxin ..... 0.8-2.2 ng/ml
gentramicin peak ..... 5-10 mcg/ml
gentramicin trough ..... <2 mcg/ml
lidocaine ..... 1-5 mcg/ml
lithium ..... 0.6-1.2 meq/l
NAPA ..... 10-30 mcg/ml
phenobarbital ..... 15-40 mcg/ml
phenytoin ..... 10-20 mcg/ml
primidone ..... 5-12 mcg/ml
procainamide ..... 4-8 mcg/ml
quinidine ..... 1.5-3 mcg/ml
theophylline ..... 10-20 mcg/ml
tobramycin peak ..... 5-10 mcg/ml
tobramycin trough ..... <2 mcg/ml
valproic acid ..... 50-100 mcg/ml
vancomycin trough ..... 5-10 mcg/ml
DAILY ELECTROLYTE REQUIREMENTS
122
Na+ (as NaCl) 80-120 mEq/24h
Cl- (as NaCl) 80-120 mEq/24h
K+ 50-100 mEq/24h
Ca2+ 1-3 gm/24h
Mg2+ 20 mEq/24h
Glucose 100-200 gm.24h
Unless otherwise indicated
CONVERSIONS
124
1 in = 2.54 cm
1 ft = 0.3048 m
1 mi = 1.6093 km
1 fl oz = 29.573 mL
1 oz = 28.350 gl
1 lb = 0.45359 kg
1cm = 0.3937 in
1 m = 3.2808 ft
1 km = 0.6214 mi
1 mL = 0.033814 fl oz
1g = 0.035274 oz
1kg = 2.2046 lbs
37 0 °C = 98.6 °F
37 8.0 °C = 100.0 °F
38.0 8.0 °C = 100.4 °F
38.3 8.0 °C = 101.0 °F
38.9 8.0 °C = 102.0 °F
39.0 8.0 °C = 102.2 °F
39.4 8.0 °C = 103.0 °F
40.0 8.0 °C = 104.0 °F
°F = (°C x 9/5) + 32
°C = (°F - 32) x 5/9
IV SOLUTIONS
126
Fluid | Glucose | Na+ | K+ | Cl- | mosm/L | Kcal/L
D5W | 50g | 0 | 0 | 0 | 252 | 170
D10W | 100g | 0 | 0 | 0 | 505 | 340
D50W | 500g | 0 | 0 | 0 | 2520 | 1700
½NS(0.45%NS) | 0 | 77 | 0 | 77 | 154 | 0
NS(0.9%NS) | 0 | 154 | 0 | 154 | 308 | 0
3% NS | 0 | 513 | 0 | 513 | 1026 | 0
D5¼NS | 50g | 38 | 0 | 38 | 329 | 170
D5½NS | 50g | 77 | 0 | 77 | 406 | 170
D5NS | 50g | 154 | 0 | 154 | 560 | 170
LR | 0 | 130 | 4 | 110 | 272 | <10
D5LR | 50 | 130 | 4 | 110 | 524 | 180
Albumin | 0 | 145 | 0 | 145 | unk | unk
ABBREVIATIONS
128

FIG. 9

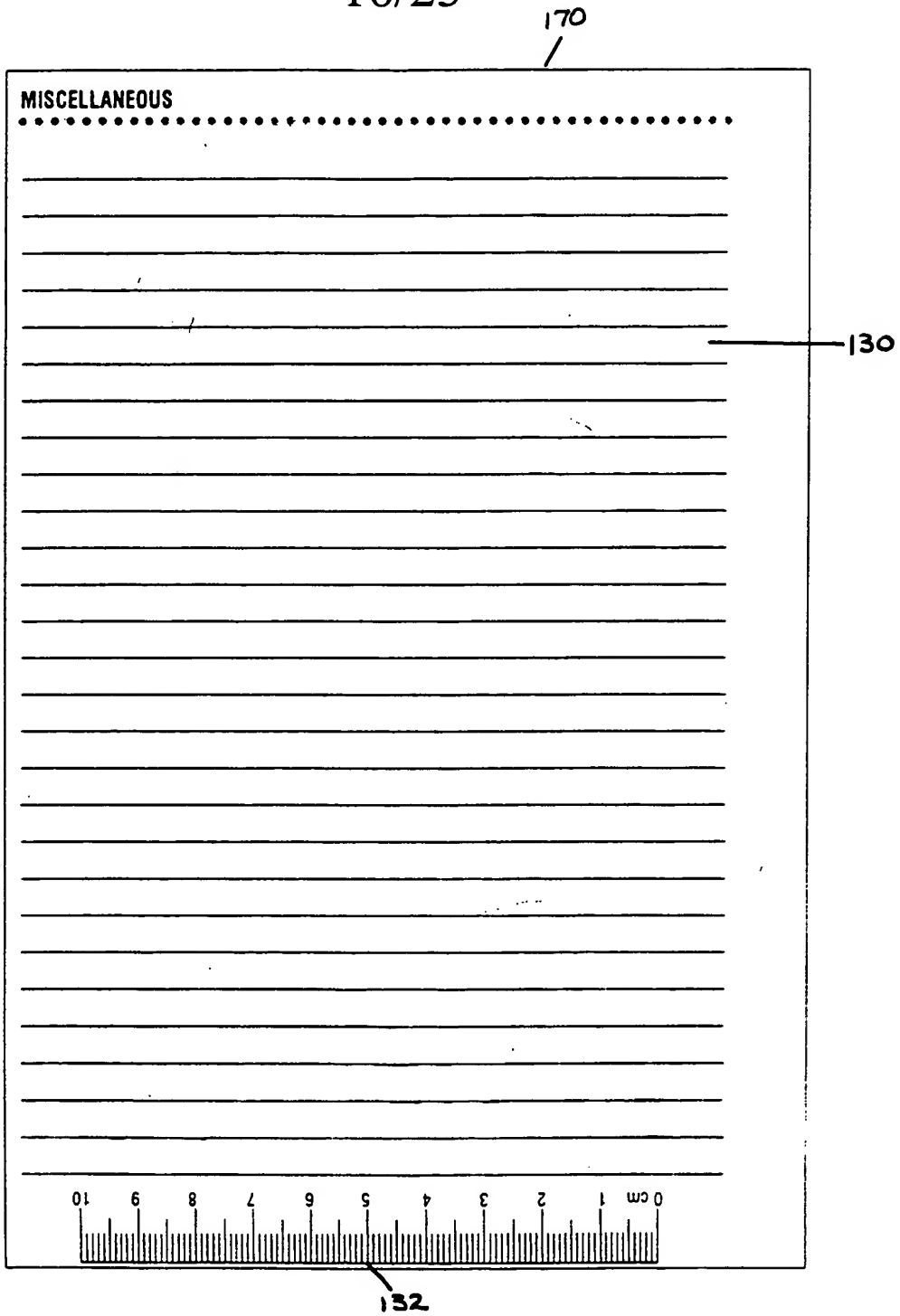

FIG. 10

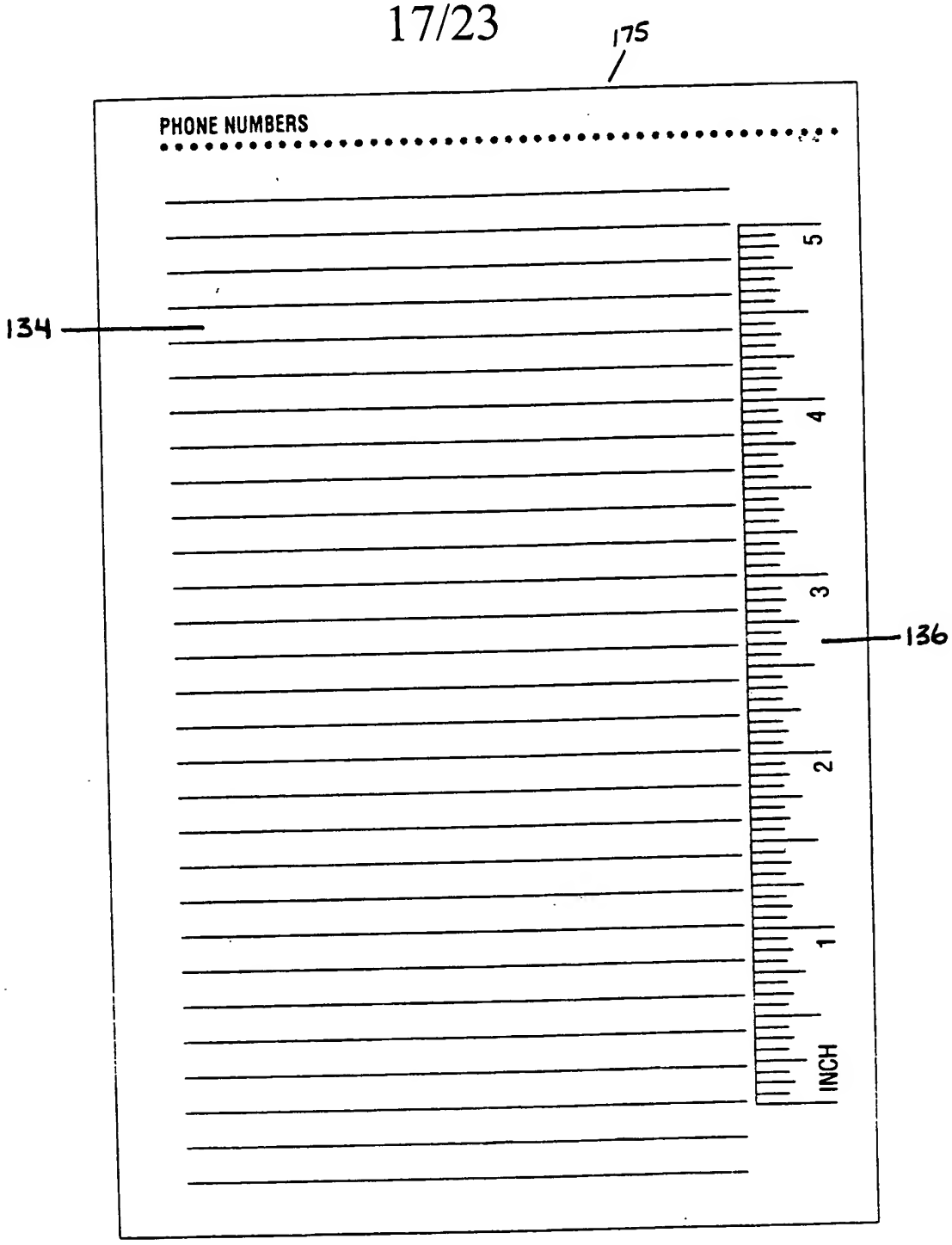

FIG. 11

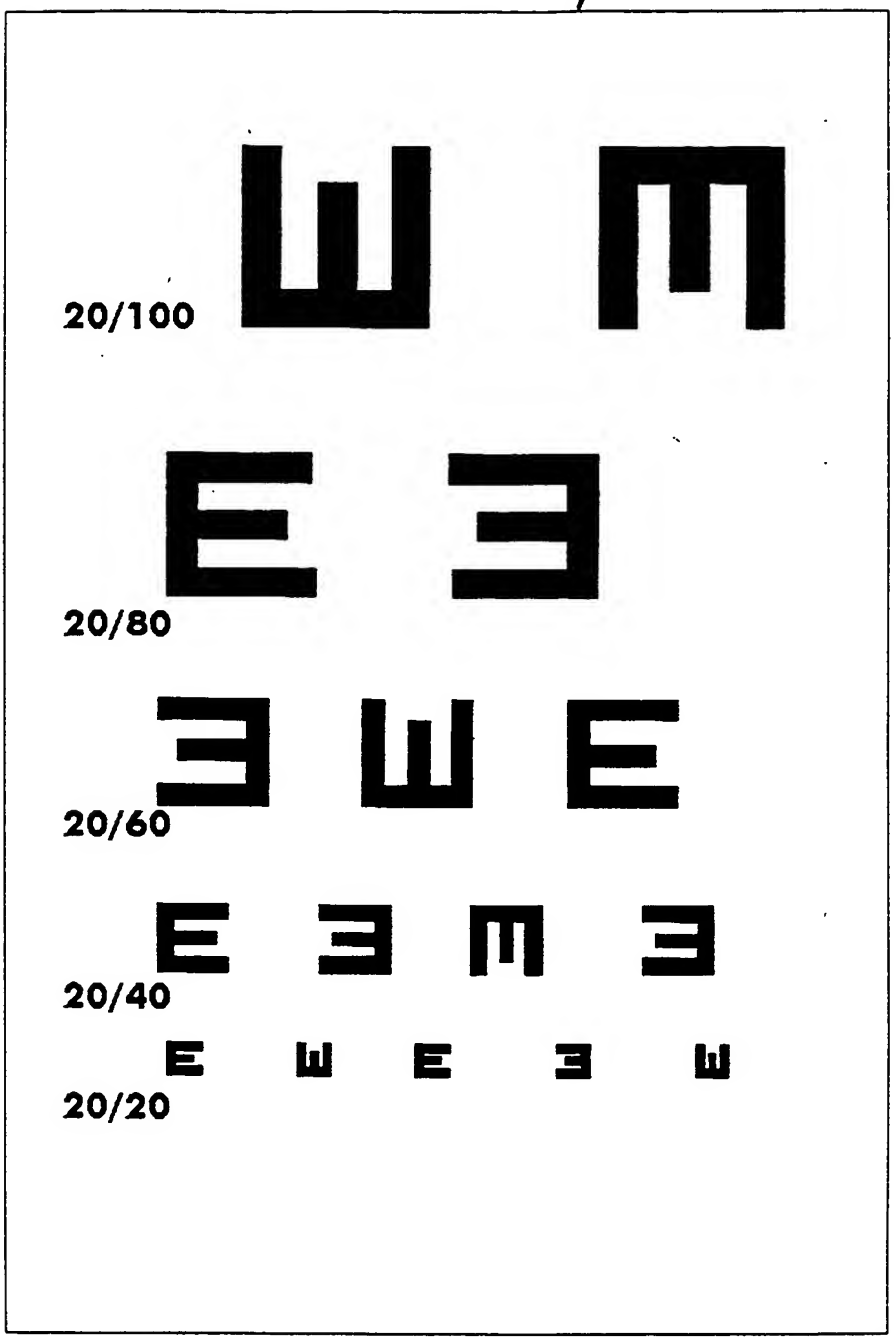

FIG. 12

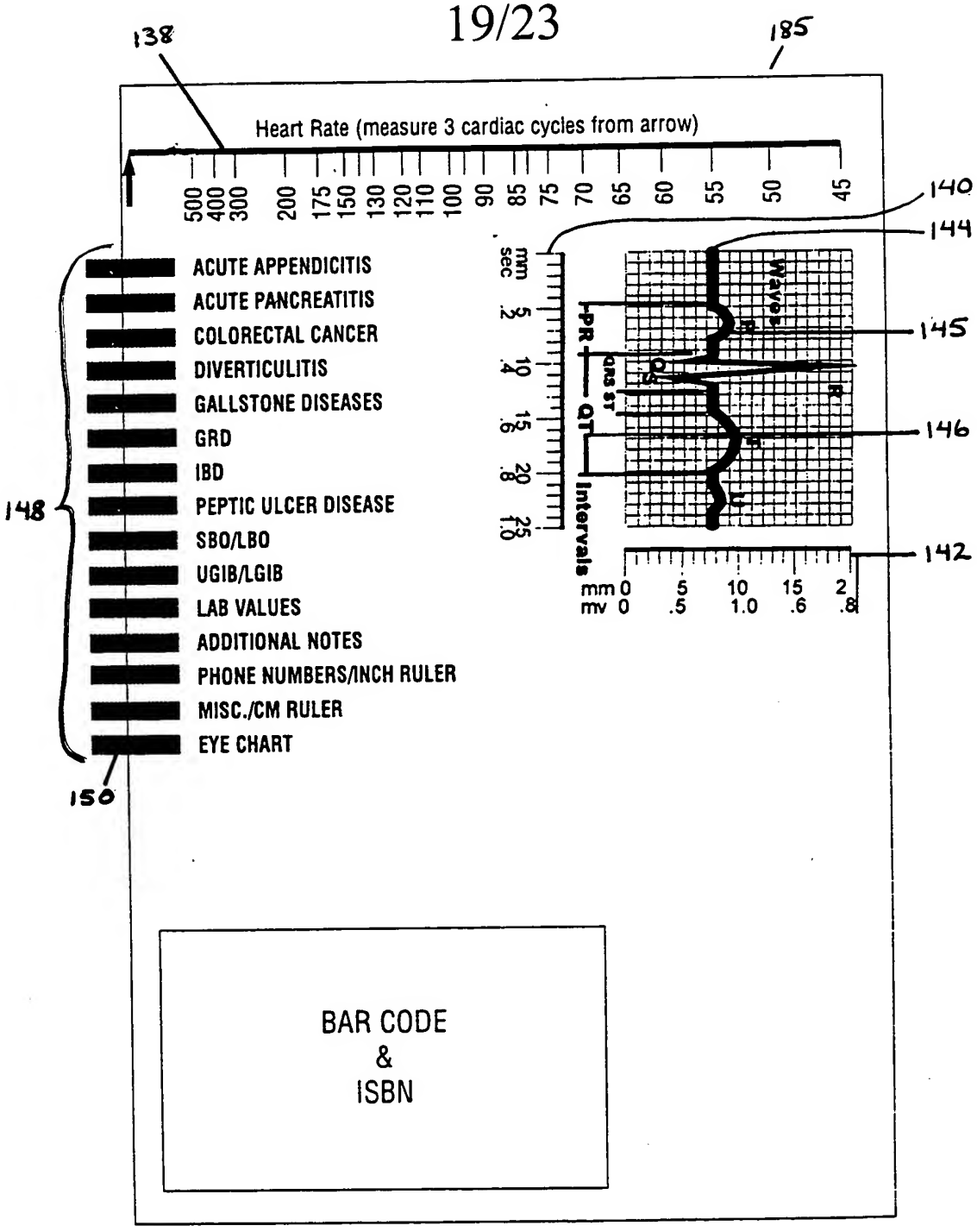
138
185
Heart Rate (measure 3 cardiac cycles from arrow)
500 400 300 200 175 150 130 120 110 100 90 85 75 70 65 60 55 50 45
140
144
145
146
142
148
150
ACUTE APPENDICITIS
ACUTE PANCREATITIS
COLORECTAL CANCER
DIVERTICULITIS
GALLSTONE DISEASES
GRD
IBD
PEPTIC ULCER DISEASE
SBO/LBO
UGIB/LGIB
LAB VALUES
ADDITIONAL NOTES
PHONE NUMBERS/INCH RULER
MISC./CM RULER
EYE CHART
mm sec
PR
QRS
QT
Intervals
mm 0 5 10 15 2
mv 0 .5 1.0 .6 .8
BAR CODE
&
ISBN

FIG. 13

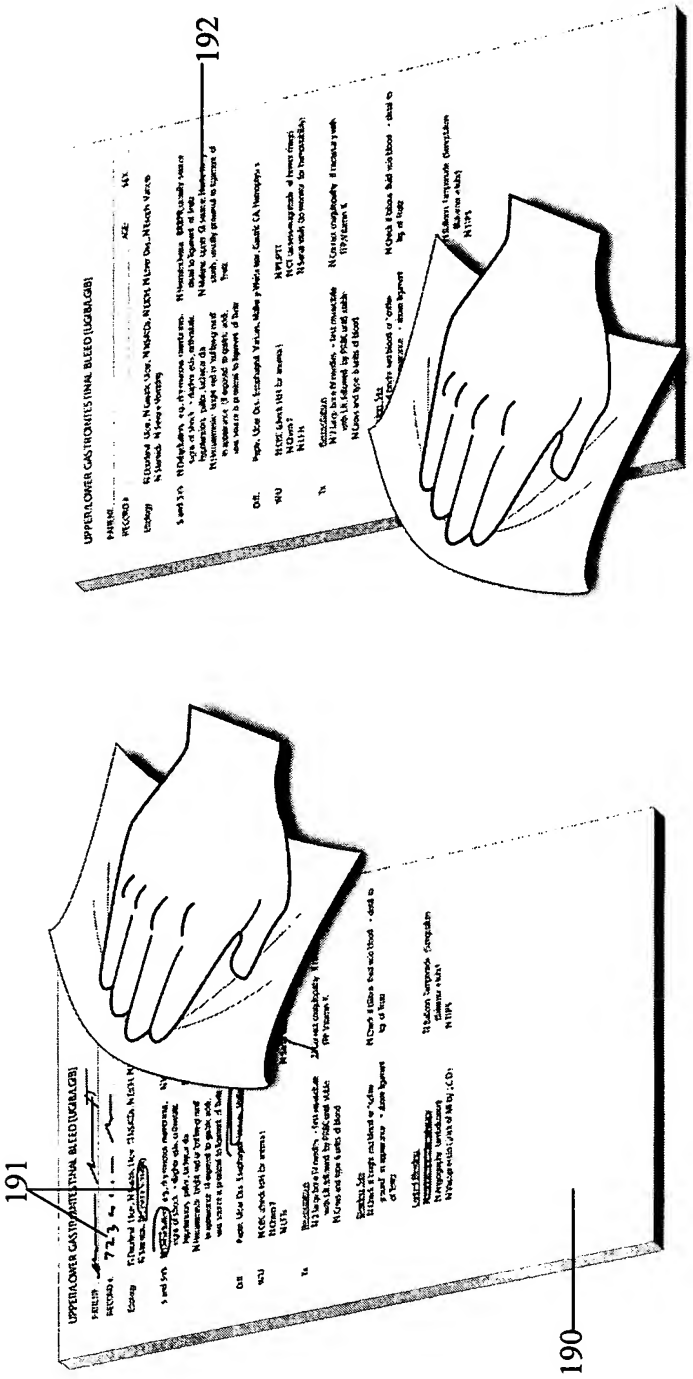

FIG.14A

FIG.14B

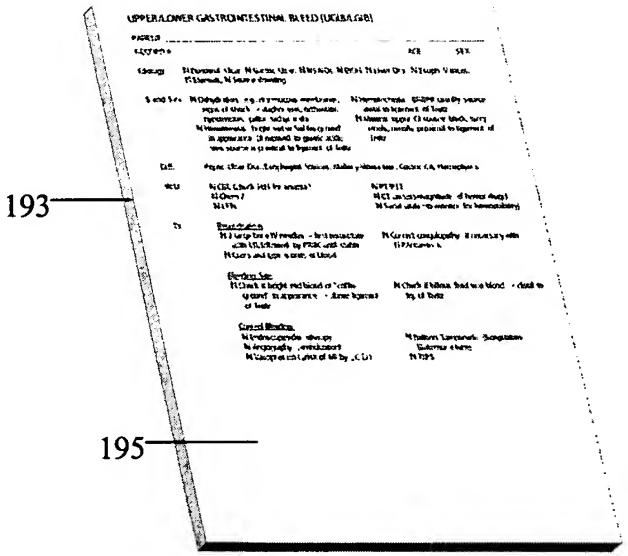

FIG.15A

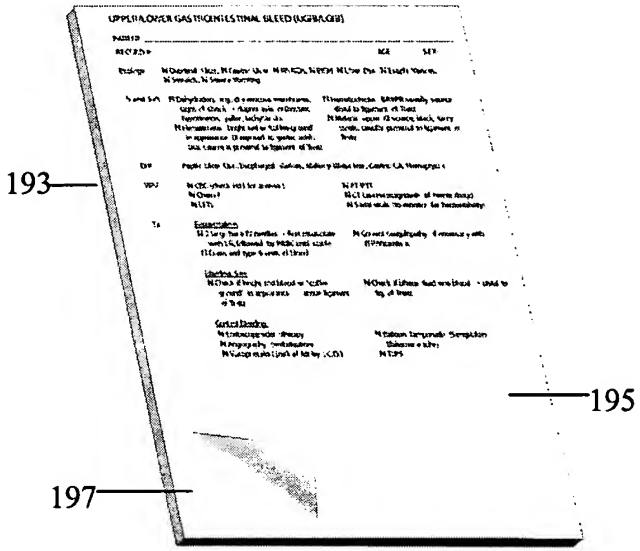

FIG.15B

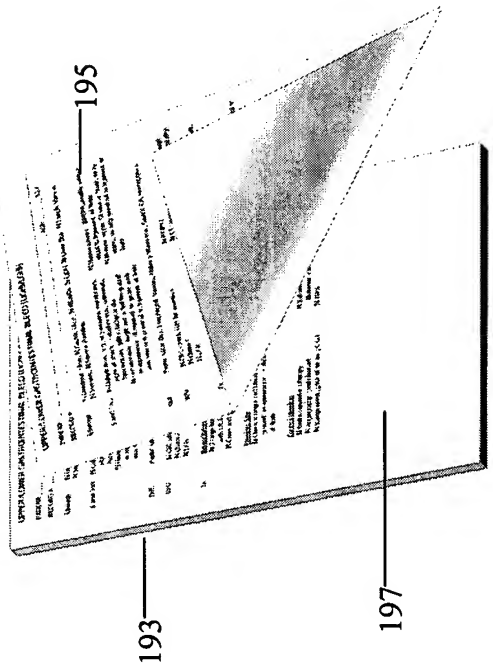

FIG.15D

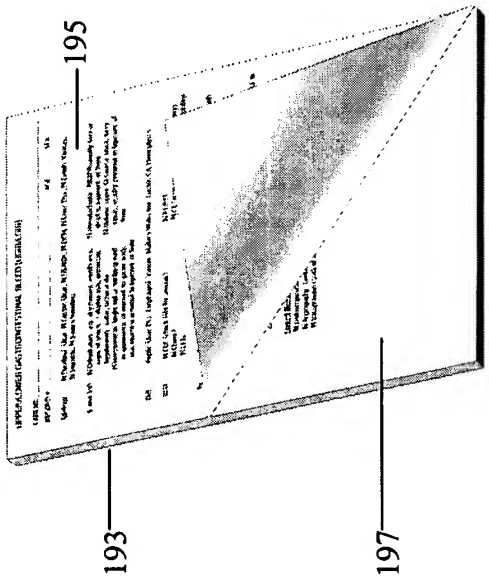

FIG.15C

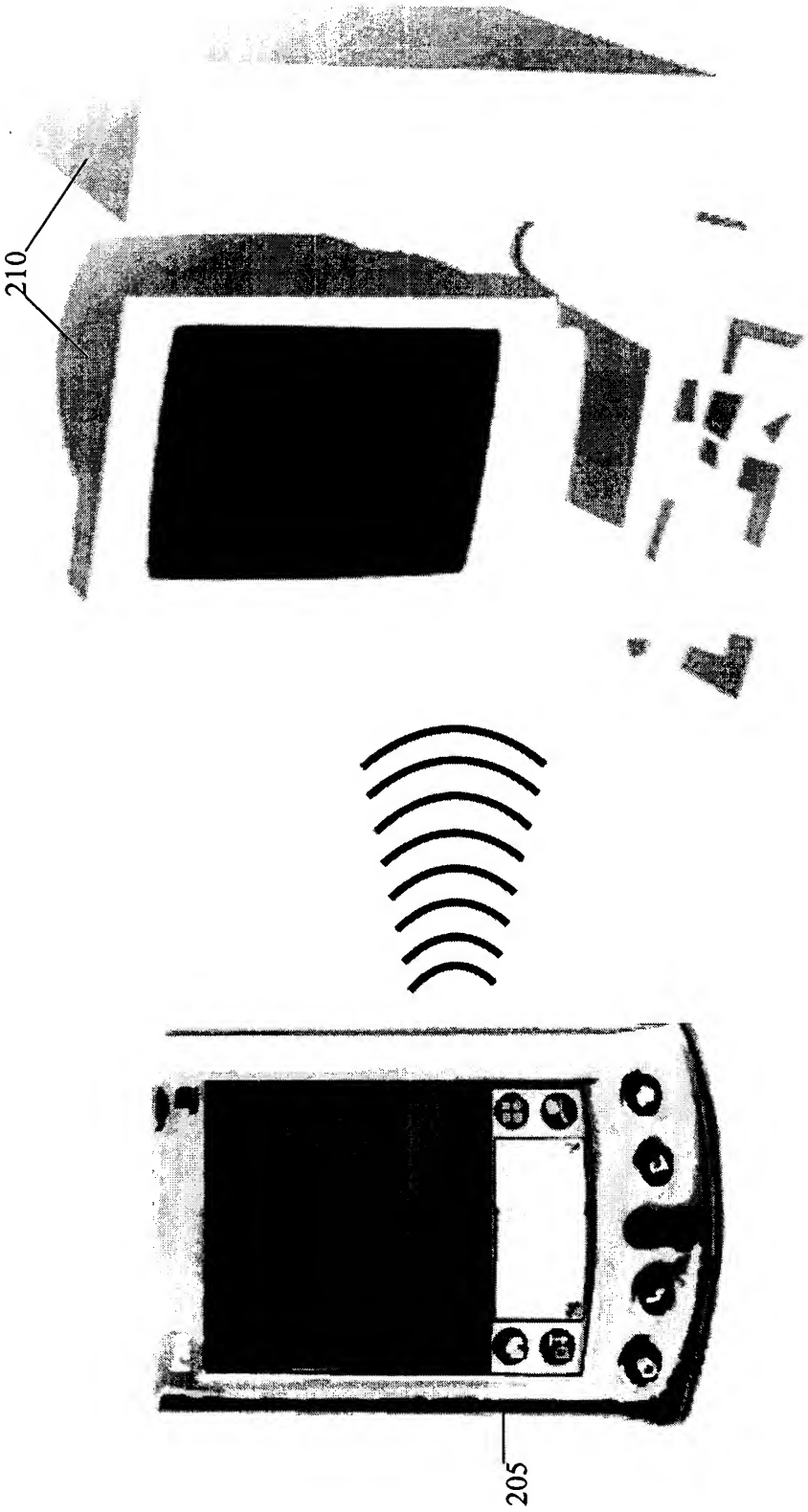

FIG.16